

## NON-PRICE FACTORS THAT INFLUENCE CONSUMERS' WASTED FOOD AMOUNTS

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### Abstract

Each year the price of food products gradually increases, and some economists point out that to reduce the food prices, the food production increase must be managed. But even if some people suffer from hunger, others simply discard their food, so the possible food production increment can also increase wasted food amounts. One of the possible solutions to food product insufficiency is to cut down wasted food amounts. The main aim of this paper is to identify the non-price related factors that influence people to waste their food, look at food wasting matter from seller and buyer point of view, and also to identify the solutions to food wasting reduction. The results are based on research of theoretical guidelines and pilot research conducted in 2013, in which participated 610 respondents. Pilot research results shows that people are less concerned about reducing food wastage when it comes to environmental problems, but are the most motivated if they see a real opportunity to save money. So to motivate people waste less people need to be shown how their food wasting habit affect them economically.

**Keywords:** packaging, environment, storage, planning, labelling.

### Introduction

The global population exceeded seven billion people during 2011 and is predicted to reach 9.3 billion by 2050, with a projected increased food demand of 50–70%. Against this backdrop of rising demand, 868 million people are chronically under-nourished, equating to one in eight people worldwide. At the same time, it is estimated that over one third of all food produced globally for human consumption goes to waste (Bond et al., 2013).

A food-wasting problem can be viewed from very different perspectives, not only as social problem that influence people relationship and values, but also as economical problem that directly or indirectly affects people's incomes and in general can negatively affect the environment.

The aim of this review paper was to summarize the research conducted previously, identify non-price factors that affect food wasting at household level, explore the influence of non-price factors on selected respondents, and provide the evaluation of the problem by identifying the results of the pilot research.

### Materials and Methods

Primary sources for theoretical discussion and pilot research survey shape identifying are scientific papers, monographs, fundamental documents that are closely related to the subject, which could be found in the scientific databases and as free sources on the Internet. Papers were selected by the search terms and by the provided references in the studies that were found.

The pilot research was conducted from May till September 2013. The survey was posted on the Internet, and had 48 questions in Latvian regardless peoples' eating habits that influence food wasting. 610 respondents took part in the survey: 345 were women and 265 – men.

Age distribution:

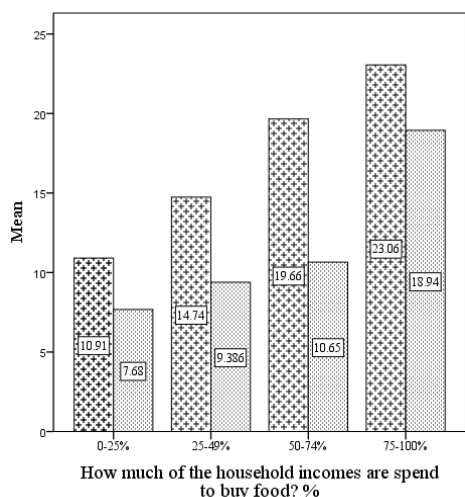
- 18–29 years: 135 respondents or 22%
- 30–49 years: 243 respondents or 40%

- 50–69 years: 196 respondents or 32%
- 70 and more years: 36 respondents or 6%

### Results and Discussion

Wasted food is defined as food that is discarded and not fully consumed (Princeton University Dictionary, 2006); it is closely related to attitudes and behaviours. Food gets 'lost' if it is affected by structural causes such as weak infrastructure, technological obsolescence, lack of refrigeration, etc. (Gustavsson et al., 2011). If the food loss problem in poor countries could be solved by investing money in infrastructure, processing and storage technologies and facilities that is mostly by investments then in rich countries to solve a food wasting problem, it is necessary to change people's attitude towards food, their habits and even laws.

The food waste concept, however, is not so strictly defined and it varies from research to research. Moreover, classification itself can be specific to a particular region or culture, and can be affected by the eating habits of the researchers. Thus, the classification not only includes the stage of food that gets discarded, but also it can include the interpretation of what is considered avoidable and unavoidable food waste. While, for example, Langley et al. (2010) consider all preparation by-products and residues of food preparation inedible and therefore unavoidable, researches that cooperate with Waste and Resources Action Programme use an additional subcategory of possibly avoidable food. Possibly avoidable food is considered edible and defined as the food and drink that some people eat and others do not (e. g. bread crusts), or that can be eaten when food is prepared in one way but not in another (e. g. potato skins)' (Household Food ..., 2009). As for avoidable food, studies generally agree that wholly unused and partly consumed food would be avoidable, but the classification of the post-preparations and consumption residues differ.



**Figure 1. Correlation between incomes and food waste amounts**

- ▣ How much of the discarded waste is so called possibly unavoidable food waste? %
- ▤ How much of the discarded waste is so called possibly avoidable food waste? %

The pilot research data shows that the bigger part of the average food waste makes a so-called unavoidable food waste, though an avoidable food waste still makes a significant part of the total waste. Research data also shows that with the income growth, the part of the food waste in the total waste also grows, both unavoidable and avoidable. That can also be explained with pickiness this people can afford. For example, when some part of the food seems less suitable for eating (in a case of an unavoidable food waste), and that is why it simply gets discarded. Or also can be explained with the assumption that it is easier for them to throw away suitable food when people just don't want to eat it anymore, or have it cooked in a such a big amount, that it isn't possible to eat it all, before it spoils (in a case of an avoidable food waste).

Economics researchers view a food-wasting problem manly from demand and supply perspective, evaluating what can more affect decrement of wasted food amounts – the increase of food demand or the increase of food supply (Rutten, 2013). Researching how food wasting reduction can affect both sellers / producers and consumers. Assuming that the decrease of wasted food amounts at consumption level can lead to the increase of consumption of the products that previously would be discarded, so basically people would eat more, or consumers would just buy fewer products, so in a way instead of just discarding their food they wouldn't buy it at all, saving some money. The latter possibility would negatively affect sellers and producers of those products. So sellers aren't motivated to decrease food wasting. Though if consumers demand for food products decrease, it does not mean that sellers cannot increase their incomes, they can always try to offer some different products that would be demanded by consumers. Because that, not buying certain food products, consumers would save money,

so they have opportunity to buy something else, or even save some money up, so they can buy something more expensive, what previously they couldn't afford. In general, the food waste decrease can positively or neutral affect consumers, and neutral or negatively – producers / sellers. That is why for producers / sellers it is not beneficial to decrease their own wasted food amounts or that consumers get more cautious about their food waste habits and start to waste less. Because that for producers/sellers their incomes are proportional to the sold products. Thus, it is only possible to decrease wasted food amounts if consumers are informed about food wasting problem in general. There are several different factors that can affect food thoughtless discarding, and those factors are closely connected to the people's shopping habits, understanding of the labelling, financial and envelopment concern etc.

Table 1

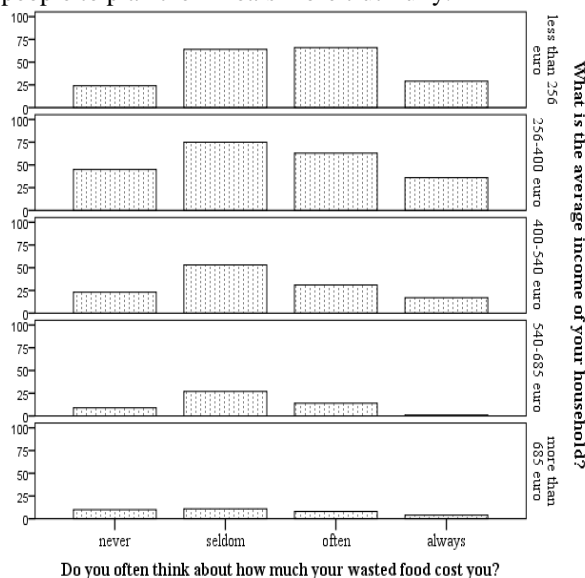
**Non-Price Factors that Influence Consumers' Wasted Food Amounts**

Factors	Influence positively	Influence negatively
Unawareness of wasted food amounts	No positive influence	Not only food but also money gets wasted
The way of storing	Food can be used more expedient for a longer time	No negative influence
Packaging	Helps food products to stay fresh and suitable for the consumption for a longer time	Non-quality or unsuitable packaging doesn't allow to consume food products fully
Environmental concern	No positive influence	No negative influence
Financial benefits	Helps to save up some money, so people are motivated to waste less	No negative influence
To buy list and meal planning	People make less impulsive purchases. Bigger possibility that all brought food will be consumed	No negative influence
Not understanding / being not able to read labelling of the product	No positive influence	Not knowingly – it is possible to buy food with almost expiring validity Because of the misleading labelling, can buy food products that consumer didn't intend

Source: made by the author

No doubt, that the price can affect how much food can be bought, and therefore discarded in the end, but the price is not the only essential factor that effect food wasting.

One of the factors that affect food wasting is the unawareness of the wasted food amounts, and the main reason for that is that discarded food don't stay stored in the house for too long, and if consumers compare bought and discarded food amounts, the discarded part seems insignificant (Jones, 2004). Therefore becoming more aware of the food products that get wasted, would help save up money and maybe also would stimulate people to plan their meals more truthfully.



**Figure 2. The correlation between the household incomes and concern about wasted food cost (%)**

To be able to find out how aware people in Latvia are about food wasting amounts in their household, the pilot research survey contained a question about how often people think about the cost of the food that in the end gets discarded. In addition, to be able to get a more demonstrative answer, this question was analysed by searching the correlations with the question about the average household income.

The results showed that in the households with the lower average incomes people much often think about how much their discarded food cost them, so the lower incomes are the more aware of the wasted food amounts people are. However, as it was stated in the Figure 1, people with higher incomes waste way more, so they are also the ones that think about the cost of the waste way less, but their contribution to the total food waste is the greatest. That is why it is important to make people with higher incomes much more aware of the food waste problems and consequences.

The way people store their food products is closely connected to the fact how long those products can stay fresh and valid for the consumption (Gustavsson et. al., 2011). So right storing helps to use food more expedient for a longer time.

Table 2

**Available places of storage and influence on wasted food amounts**

		Possibly avoidable food waste of all waste, %			
		0-24	25-49	50-74	75-100
A refrigerator with a freezer	Count	517	35	12	3
	% of Total	85.8	5.7	2.0	0.5
A refrigerator without a freezer	Count	16	0	0	1
	% of Total	2.6	0.0	0.0	0.2
More than one refrigerator with a freezer	Count	35	3	0	0
	% of Total	5.7	0.5	0.0	0.0
A freezer	Count	113	6	0	0
	% of Total	18.5	1.0	0.0	0.0
A storeroom	Count	175	14	6	1
	% of Total	28.7	2.3	1.0	0.2
A cellar	Count	266	16	6	0
	% of Total	43.6	2.6	1.0	0.0
Total	Count	557	37	12	4
	% of Total	91.3	6.1	2.0	0.7

It is hard to explore all possible storing methods of individuals, for that it would be necessary to live together in one household with respondents. But it is possible to search the correlation between existing storing places in the household and the amount of possibly avoidable food waste in total waste. As it is shown in the Table 2, people waste way less 0-24% of all food if they have a proper storage place for it. And the more storing places respondents have, the less food they waste in the end.

Packaging not only prolongs the freshness and validity of the product, but also makes it more safe for a use, so bought food can be used longer, and in the best-case scenario – fully, not wasting much of it (Manalili et al., 2011).

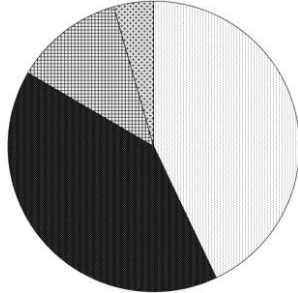
Table 3

**Things customers pay attention when buying food**

	Responses		Percent of Cases
	Quantity	Percent	
Price	549	31.4	90
Ingredient list	294	16.8	48.2
Product's expiration date	471	26.9	77.2
Packaging	106	6.1	17.4
Product's volume or weight	330	18.9	54.1

The pilot research results shows that respondents pay attention to the packaging way less, than to the price and product's expiration date. Even if food validity is closely connected to the packaging.

But when it comes to the environment concerns Baker et al. (2009) came to conclusion that it motivates to think about how to reduce food discards way less than the possibility to save some money. But people take it positively, that food wasting reduction and money saving can also help to positively impact environment.



**Figure 3. Respondents care about food wasting effect on environment**

Do you care about how discarded food affects environment?  
 Never  Seldom  Often  Always

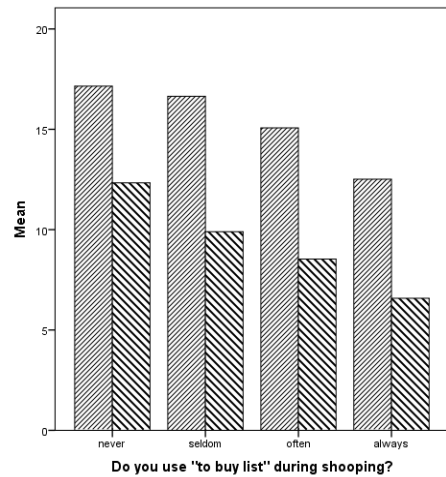
The pilot research results showed similar situation as Baker et al. (2009) described, respondents do not care or seldom care about environment problems that are caused by food wasting.

People admit that planning meals and listing products that need to be bought can help reduce food wasting; because that can help with not buying unneeded products spontaneously. But research also show that no matter that people want to reduce wasted food amounts and even plan what to buy, for them it is still hard not to make impulsive buys. Sometimes people also just make up their minds and do not want to eat anymore something that they previously planned and have bought food for (Stefan et al., 2012).

So in a way if the planning has a positive impact on food waste reduction, than the shopping routine has an opposite impact. Meaning that no matter how good a person previously thought about that to buy and what to do with bought food, during shopping it still is hard not to buy food, that wasn't planned, and that this action in the end won't be a reason for some food wasting (Stefan et al., 2012).

Gunders (2012) came to conclusion that main part of the consumers does not really plan what they are going to eat. Food gets impulsively bought (sometimes those action influence commercials, or sales, or the wants/needs of the person at that time), but then food gets stored and unused, sometimes food gets bought in such a big amount that it isn't even possible to consume all of it before the expiration day or before it actually spoils. Researcher explains the buy of big amounts of food products with the policy sellers/manufacturers have, when it is more beneficial to the consumers to buy a bigger amount, because

calculating per kg, it is more beneficial, because that per kg that product is more cheaper.



**Figure 4. Correlation between meal planning and food waste**

- ▨ How much of the discarded waste is so called possibly unavoidable food waste? %
- ▩ How much of the discarded waste is so called possibly avoidable food waste? %

The pilot research shows that planning does help with reducing unavoidable and also avoidable food waste. However, there does not exist a significant difference between values. That probably also can be explained by the conclusions Gunders (2012) came up in his research, that even if Latvian respondents plan their meals beforehand, for them it is still hard not to make impulsive buys.

Food labelling can be very misleading, people can buy food that contains ingredients that can cause allergic reactions, so not knowingly a person can buy it, and, if a product consumed fully, a person can have health problems, but if a product wasn't fully consumer, it most likely will be discarded, so in the end – wasted. Food labelling also can mislead people in to thinking that the product is unsuitable for the consumption, assuming that expiration date shows the exact day when product must be discarded obligatory (Manalili et al., 2011).

It is hard to determine if respondents gets misled by the labelling, because that most of the time (not having a bad allergic reaction, or product having no bad smell or taste) a person does not even understand that wrong/unsuited food was bought.

So it was important to identify answers to the question about if people deliberately buy products, whose validity has almost ended, and correlate those answers with answer to the question how people determine if the food is still valid for the consumption.

Those respondents that buy food whose expiration date is very close, more likely will judge the picked food suitability for the consumption not by date, but by the smell of the product.



Table 4

**Food labelling and respondents' food validity determination methods**

How do you determine if food is valid for the consumption		Do you buy food whose validity will end soon?			
		never	seldom	often	always
By the expiration date	Count	80	326	50	0
	% within row	17.5	71.5	11	0
By the look of the product	% within column	32.1	29.2	26.7	0
	Count	62	280	45	0
By the smell of the product?	% within row	16	72.4	11.6	0
	% within column	24.9	25.1	24.1	0
By the taste of the product	Count	59	306	54	0
	% within row	14.1	73	12.9	0
	% within column	23.7	27.4	28.9	0
	Count	48	205	38	1
	% within row	16.4	70.2	13	0.3
	% within column	19.3	18.4	20.3	100

Those people, whose food is still valid judged by the date written on the packaging, decide if food is valid for the consumption most often by its' taste.

**Conclusions**

1. Food thoughtless discarding is affected by different factors, and even if the price of the food plays a very significant role in the future of the bought food, it is not the only factor that affect unavoidable and avoidable food waste.
2. Unawareness, storing, the packaging of the food, the environmental concern, financial benefits, planning and the labelling – all this non-price factors can have both positive and negative effect on food wasting.
3. People in Latvia have similar food wasting tendencies as foreigner researchers have observed during their own research.
4. In order for Latvian people to understand the seriousness of the food wasting problem in the

world, people must be more often informed about food wasting problems and consequences. Not only on global scale, but also on personal level – how people's actions affect them financially, because that financial factor is the most effective lever that can make people waste food less.

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